Owner's Manual & Safety Instructions

Save This Manual Keep this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number in the back of the manual near the assembly diagram (or month and year of purchase if product has no number). Keep this manual and the receipt in a safe and dry place for future reference.

CEN-TECH®

ITEM 62120

PROFESSIONAL OBD II & CAN SCAN TOOL

Visit our website at: http://www.harborfreight.com
Email our technical support at: productsupport@harborfreight.com

REV 14g

When unpacking, make sure that the product is intact and undamaged. If any parts are missing or broken, please call 1-888-866-5797 as soon as possible.

Copyright© 2014 by Harbor Freight Tools®. All rights reserved.
No portion of this manual or any artwork contained herein may be reproduced in any shape or form without the express written consent of Harbor Freight Tools. Diagrams within this manual may not be drawn proportionally. Due to continuing improvements, actual product may differ slightly from the product described herein. Tools required for assembly and service may not be included.

⚠WARNING

Read this material before using this product. Failure to do so can result in serious injury. SAVE THIS MANUAL.

Table of Contents

Safety.....3
Specifications.....5
Overview.....5
Definitions.....6
Control Modules.....6
I/M Monitors.....7
Diagnostic Test Modes.....8
Diagnostic Trouble Code.....9
Setup - Before Use:.....10
Operating Instructions.....12
Connect Scan Tool.....12
Setup.....13
I/M Readiness Quick-Check.....17
Diagnostic Test Modes.....18
Read Trouble Codes.....19
DTC Lookup.....20
Erase Codes.....21
View Live PID Data.....22
Record Live PID Data.....24
Playback Live PID Data.....27
View Freeze Frame Data.....28
I/M Readiness.....28
02 Monitor Test.....31
On-Board Monitor Test.....32
Component Test.....33
Vehicle Information.....32
Modules Present.....33
Review Data.....34
Ready Test.....34
Print Data.....35
Install/Update Software.....35
About.....36
Maintenance.....37
Troubleshooting.....38
Parts List.....39
Warranty.....40

CEN-TECH®

WARNING SYMBOLS AND DEFINITIONS	
⚠	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠ DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE CAUTION	Addresses practices not related to personal injury.

Important Safety Information

Work Area Safety

1. Keep your work area clean and well lit. Cluttered benches and dark areas may cause accidents.
2. Do not connect or disconnect the Scan Tool while the ignition is on or the engine is running.
3. **DO NOT attempt to operate the Scan Tool while driving the vehicle. Have a passenger operate the Scan Tool.**
4. Before testing a vehicle, engage the parking brake and chock the tires.
5. NEVER smoke or allow a spark or flame in vicinity of battery or engine.
6. Operate the vehicle in a well ventilated work area.
   Exhaust gases are poisonous.
7. Do not operate the Scan Tool in explosive atmospheres, such as in the presence of flammable liquids, gases, or heavy dust.
8. Keep a fire extinguisher suitable for gasoline/chemical/electrical fires nearby.
9. Use extreme caution when working around the ignition coil, distributor cap, ignition wires and spark plugs. These components create hazardous voltages when the engine is running.
10. Keep bystanders, children and visitors away while operating the Scan Tool.
11. This product is not a toy. Do not allow children to play with or near this item.
12. Use as intended only.
13. Inspect before every use; do not use if parts are loose or damaged.
14. Do not place the Scan Tool on any unstable surface.
15. Handle the Scan Tool with care. If the Scan Tool is dropped, check for breakage and any other conditions that may affect its operation.
16. Keep the Scan Tool dry, clean, free from oil, water or grease. Use a mild detergent on a clean cloth to clean the outside of the Scan Tool, when necessary.
17. Store the Scan Tool and accessories in a locked area out of the reach of children.
18. Maintain product labels and nameplates. These carry important safety information. If unreadable or missing, contact Harbor Freight Tools for a replacement.

Electrical Safety

1. Do not use the Scan Tool while standing in water.
2. Avoid body contact with grounded surfaces such as pipes, radiators, ranges and refrigerators.
3. Do not expose the Scan Tool to rain or wet conditions.
   Water entering the Scan Tool increases the risk of electric shock.
4. Make sure your hands are dry before operating the Scan Tool.

Personal Safety

1. Wear ANSI-approved safety goggles during use.
2. Do not wear loose clothing or jewelry. Keep your hair, clothing, and gloves away from moving parts. Loose clothes, jewelry, or long hair can be caught in moving parts.
3. Do not use the Scan Tool while tired or under the influence of drugs, alcohol, or medications. A moment of interruption can result in serious personal injury.
4. People with pacemakers should consult their physician(s) before use. Electromagnetic fields in close proximity to heart pacemaker could cause pacemaker interference or pacemaker failure.
5. **WARNING:** The cord of this product contains lead, a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm. Wash hands after handling. (California Health & Safety Code § 25249.5, *et seq.*)
6. **WARNING:** This product contains lead, a chemical known to the State of California to cause cancer and birth defects or other reproductive harm. (California Health & Safety Code § 25249.5, *et seq.*)
7. The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

Service

There are no user serviceable parts. Scan Tool service must be performed only by qualified repair personnel.

Specifications

Display Screen	TFT Color (320 x 240)
Operating Temperature	32°F to 140°F
Storage Temperature	-4°F to 158°F
Power	8V to 18V power provided by vehicle battery

Overview

OBD II On-Board Diagnostics

It is required by the EPA that all 1996 and newer vehicles sold in the United States be equipped with an OBD II computer system.

OBD II is an early warning system designed to monitor engine, transmission, and emissions control components by performing specific diagnostic tests.

When a fault condition is detected, the system captures important data and activates the “Check Engine” light.

If the light comes on, the vehicle might have a condition that wastes fuel, shortens engine life, or causes excessive air pollution. If the problem that caused the light to come on is addressed, for instance a loose gas cap is tightened, the light will go out.

If the light comes on and stays on, a minor engine fault condition is occurring and should be addressed as soon as possible

If the light is blinking, a severe engine fault condition is occurring and should be addressed immediately.

The Scan Tool connects to the vehicle’s computer system and captures information that can help identify the fault condition.

Vehicle Coverage

This Scan Tool is designed to work with all OBD II compliant vehicles, including those equipped with a CAN bus.

OBD II was installed in some 1994 and 1995 model year gasoline vehicles.

To verify if a 1994 or 1995 vehicle is OBD II compliant, check the Vehicle Emissions Control Information label, which is located in the engine compartment.

Definitions

- **EOBD: European On-Board Diagnostics**
  Essentially the same as OBD II, with the same Data Link Connector and Communication Protocols.
- **Communication Protocol:** Allows different systems and sensors in a vehicle to communicate.
  There are currently five Protocols:
  CAN Bus
  J1850 VPW
  ISO 9141-2
  J1850 PWM
  ISO 14230 KWP
- **CAN: Controller Area Network**
  Message-based Communication Protocol serial bus.
- **CAN Vehicle**
  2008 and newer.
- **Pre-CAN Vehicle**
  2007 and older.
- **DLC: Data Link Connector**
  The 16-cavity connector on the vehicle that allows communication between the computer system and the Scan Tool.
- **Drive Cycle**
  A set of driving procedures that, when met, provide the Enabling Criteria for the I/M Monitors to run and complete their diagnostic tests.
- **Enabling Criteria**
  Operating conditions that must occur during a Drive Cycle to cause the I/M Monitors to run and complete their diagnostic tests.
- **MIL: Malfunction Indicator Lamp**
  The vehicle's "Check Engine" warning light that activates when a DTC is stored.
- **DTC: Diagnostic Trouble Code**
  A code stored in the computer system's memory, which helps to identify the fault condition that is causing the MIL to activate.
- **Freeze Frame Data**
  Operating conditions that are stored when a DTC is stored.
- **PID - Parameter Identification Data**
  Data returned by the vehicle's Control Modules to the Scan Tool.

Control Modules

Control Modules are individual computers that operate and monitor different systems in the vehicle. Control Modules vary depending on manufacturer.

ID codes are assigned to each Control Module, which are defined by the vehicle's Communication Protocol.

For example, a vehicle may use ID code $7E8 for the PCM and $7E9 for the TCM.

Control Module	Control Module Definition
PCM/ECU	Powertrain Control Module/Engine Control Unit
TCM	Transmission Control Module

Figure A: Common Control Modules

I/M Monitors

Inspection and Maintenance diagnostic tests that the Control Modules perform on specific sub-systems of the vehicle.

There are two types of Monitors:

- **Continuous:** Monitors that perform tests all the time while the engine is running.
- **Non-Continuous:** Monitors that require specific operating conditions to be met during a Drive Cycle in order for the Monitors to run their testing sequences.

Note: Not all Monitors are supported by all vehicles.

Gasoline Engine Monitors

Continuous	Non-Continuous
MIS - Misfire	**CAT** - Catalyst
FUEL - Fuel System	**HCAT** - Heated Catalyst
CCM - Comprehensive Components	**EVAP** - Evaporative System
	AIR - Secondary Air System
	O2S - Oxygen Sensors
	HTR - Oxygen Sensor Heater
	EGR - EGR System

Diesel Engine Monitors

Continuous	Non-Continuous
MIS - Misfire	**HCCAT** - NMHC Catalyst
FUEL - Fuel System	**NCAT** - NOx Aftertreatment
CCM - Comprehensive Components	**BP** - Boost Pressure System
	EGS - Exhaust Gas Sensor
	PM - PM Filter
	EGR - EGR System

Diagnostic Test Modes

Diagnostic Test Modes as described in the latest OBD II standard SAE J1979.

Note: Not all Modes are supported by all vehicles.

$01 - Request Current Powertrain Diagnostic Data

$02 - Request Powertrain Freeze Frame Data

$03 - Request Emission-Related Stored DTCs

$04 - Clear/Reset Emission-Related Diagnostic Information

$05 - Request Oxygen Sensor Monitoring Test Results (2007 and older vehicles only)

$06 - Request On-Board Monitoring Test Results for Specific Monitored Systems

$07 - Request Emission-Related Stored DTCs Detected During Current or Last Completed Driving Cycle

$08 - Request Control of On-Board System, Test or Component

$09 - Request Vehicle Information

$0A - Request Emission-Related Permanent DTCs

CEN-TECH®

Diagnostic Trouble Code

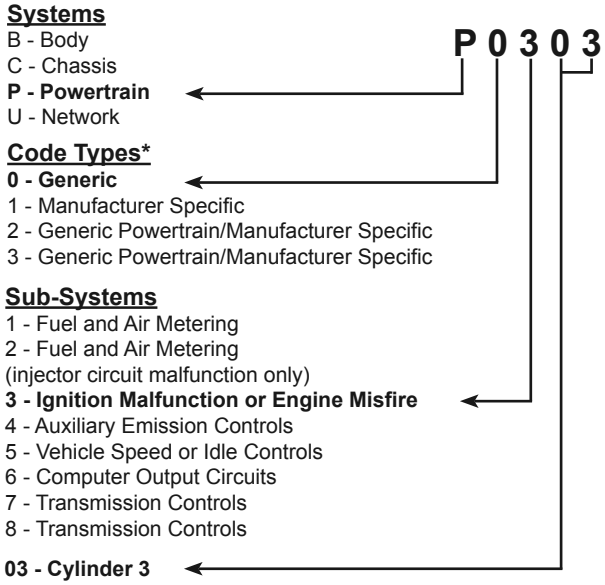
A five digit alphanumeric identifier for a fault condition identified by the OBD II system. There are three types of DTCs:

1. **Pending** - When a fault condition is identified during a Drive Cycle, but does not meet enough criteria to activate the MIL.

   If the fault condition occurs during two consecutive Drive Cycles, it will turn into a Stored DTC and the MIL will activate.

2. **Stored** - A DTC is stored when a fault condition has occurred that meets enough criteria to activate the MIL.
3. **Permanent** - A stored DTC that can only be cleared by the OBD II system, after repairs are made, and a set number of Driving Cycles have been completed.

Example: P0303 - Cylinder 3 Misfire


P 0 3 0 3
Systems
B - Body
C - Chassis
P - Powertrain
U - Network
Code Types*
0 - Generic
1 - Manufacturer Specific
2 - Generic Powertrain/Manufacturer Specific
3 - Generic Powertrain/Manufacturer Specific
Sub-Systems
1 - Fuel and Air Metering
2 - Fuel and Air Metering
(injector circuit malfunction only)
3 - Ignition Malfunction or Engine Misfire
4 - Auxiliary Emission Controls
5 - Vehicle Speed or Idle Controls
6 - Computer Output Circuits
7 - Transmission Controls
8 - Transmission Controls
03 - Cylinder 3

***The Scan Tool supports the following Code Types:**

Generic (SAE):	Manufacturer Specific:
B0, B3	B1, B2
C0, C3	C1, C2
P0, P2, P34-P39	P1, P30-P33
U0, U3	U1, U2

Figure B

Setup - Before Use:

Read the ENTIRE IMPORTANT SAFETY INFORMATION section at the beginning of this document including all text under subheadings therein before set up or use.

Functions

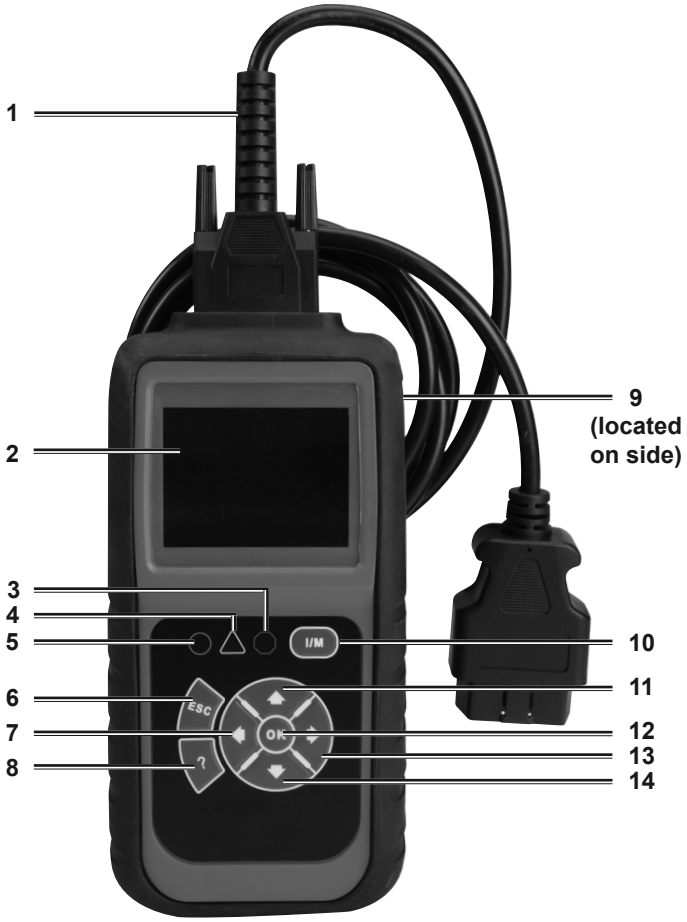


Figure C

1. **OBD II Cable**
   Connects the Scan Tool to the vehicle's DLC.

2. **LCD Screen**

3. **Red LED**
   Indicates there is a fault condition in one of the vehicle's systems and stored DTCs are present.

4. **Yellow LED**
   Indicates there are pending DTCs and/or there are Monitors that have not finishing running.

5. **Green LED**
   Indicates that engine systems are running normally and no pending DTCs are present.

6. **Cancel/Go Back** **ESC**
   Cancels a selection from a menu or returns to the previous screen.

7. **Left Button**
   Moves to previous screen if information covers more than one screen.

8. **Help Button** **?**
   View detailed information, if available.

9. **USB Connector**
   Connects the Scan Tool to a PC for updating software and printing.

10. **I/M Button** **I/M**
    Quick-checks emissions test readiness and Drive Cycle verification.

11. **Up Button**
    Moves up through menu and submenus.
    Moves to previous screen if information covers more than one screen.

12. **Select Button** **OK**
    Confirms a selection.

13. **Right Button**
    Moves to next screen if information covers more than one screen.

14. **Down Button**
    Moves down through menu and submenus.
    Moves to next screen if information covers more than one screen.

CEN-TECH®

Operating Instructions

Read the ENTIRE IMPORTANT SAFETY INFORMATION section at the beginning of this document including all text under subheadings therein before set up or use of this product.

⚠WARNING

TO PREVENT SERIOUS INJURY AND DEATH:
Exhaust gases are poisonous. Operate the vehicle in a well ventilated work area. Wear ANSI-approved safety goggles during use.

Connect Scan Tool

CAUTION: Do not connect or disconnect the Scan Tool while the ignition is on or the engine is running.

Note: The Scan Tool is powered by the vehicle's battery.

1. Turn the engine and ignition **OFF.**
2. Connect the OBD II Cable to the Scan Tool.
3. Connect the other end of the Cable to the 16-cavity DLC.

   The DLC is normally located under the dashboard on the driver's side. (Refer to vehicle's owner's manual for location of DLC.)

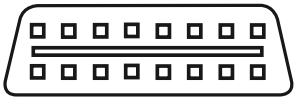


Figure D: DLC

4. Turn the vehicle's ignition **ON** with the engine **OFF**.

Note: If **Linking Error!** message displays:

- Press the **ESC** button
- Verify the ignition is **ON**
- Verify the vehicle is OBD II compliant

5. If the message does not go away, have the Scan Tool inspected by a qualified technician.

Note: To quick-check Emissions Test Readiness, see **page 17.**

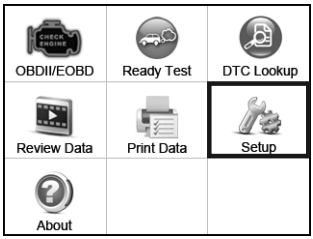
Note: To read Diagnostic Trouble Codes, see **page 19.**

CEN-TECH®

Setup

From the **Main Menu,** select **Setup**, then press **OK.**

Note: Setup is **not required to operate the Scan Tool**.



Main Menu

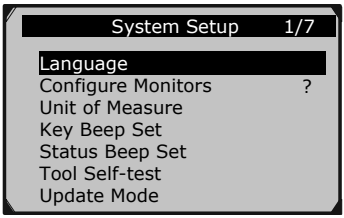


Figure E

Set Language

1. From **System Setup**, select **Language**, then press **OK**.
2. Select desired language, then press **OK**.

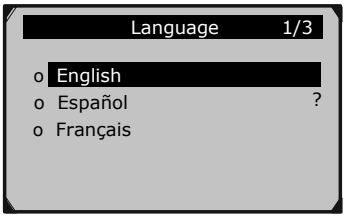


Figure F

Configure Monitors

Note: Configuring the Monitors is **not required to operate the Scan Tool**.

BEFORE CONFIGURING MONITORS:

- Run **"I/M Readiness Quick-Check" on page 17** to determine which Monitors are not supported on the vehicle.
- Refer to EPA guidelines for acceptable incomplete monitor limits.

1. From **System Setup**, select **Configure Monitors**, then press **OK.**

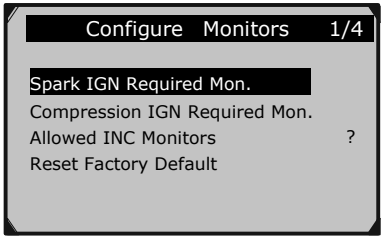


Figure G

2. Select a configuration, then press **OK.**
   a. **Spark IGN Required Mon.** For gasoline engines.
   b. **Compression IGN Required Mon.** For diesel engines.
   c. **Allowed INC Monitors** to Set how many incomplete Monitors are acceptable.
   d. **Reset Factory Default**

3. **Custom Data Set** screen shows which buttons can be used to configure the monitors. Press any button to move to the next screen.

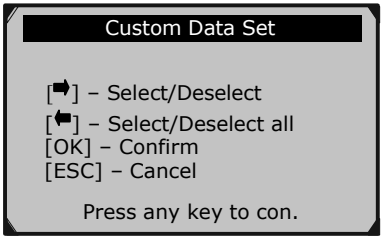


Figure H

4. For **Spark IGN Required Mon.** and **Compression IGN Required Mon.,** deselect Monitors that are not supported on the vehicle, see **"I/M Readiness Quick-Check" on page 17.**

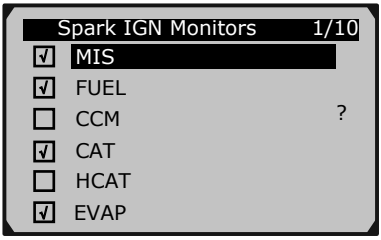


Figure I

5. For **Allowed INC (incomplete) Monitors,** select the number of incomplete Monitors allowed. Refer to EPA guidelines for acceptable incomplete monitor limits.

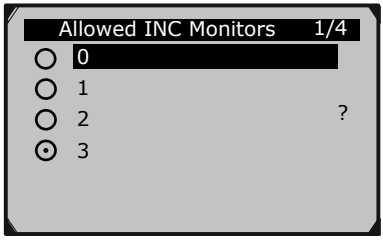


Figure J

Unit of Measure

1. From **System Setup,** select **Unit of Measure,** then press **OK**
2. Select **English** or **Metric,** then press **OK.**

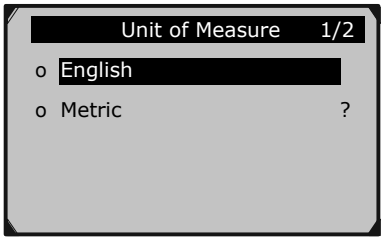


Figure K

Key Beep Set - Control Sound When Buttons are Pressed

1. From **System Setup,** select **Key Beep Set,** then press **OK.**
2. Select **Beep ON** or **Beep OFF,** then press **OK.**

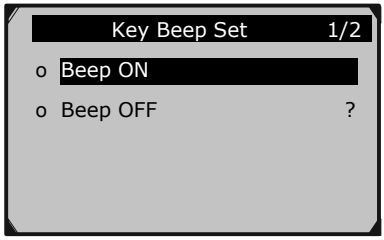


Figure L

Status Beep Set - Control Notification Sounds

1. From **System Setup,** select **Status Beep Set,** then press **OK.**
2. Select **Beep ON** or **Beep OFF,** then press **OK.**

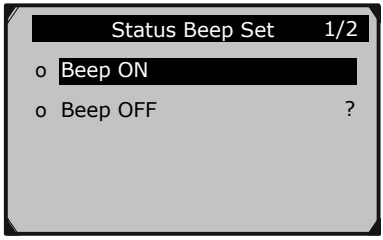


Figure M

CEN-TECH®

Tool Self-test

From **System Setup,** select **Tool Self-test,** then press **OK.**

Display Test

1. From **Tool Self-test,** select **Display Test,** then press **OK.**

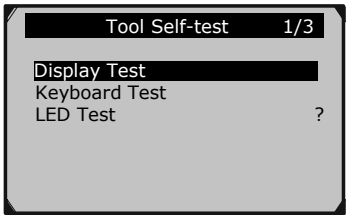


Figure N

2. To verify that the LCD screen is functioning properly, a color test will run.
3. Press **ESC** to exit the test.

Keyboard Test

1. From **Tool Self-test,** select **Keyboard Test,** then press **OK.**

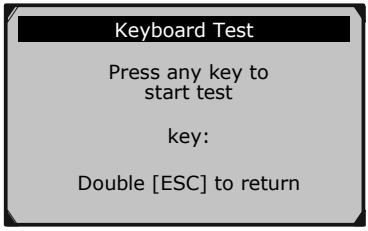


Figure O

2. Press each button to make sure they are functioning properly. If functioning properly, the correct name for each button will display after the word **"key:"**.
3. Press **ESC** twice to exit the test.

LED Test

1. From **Tool Self-test,** select **LED Test,** then press **OK.**

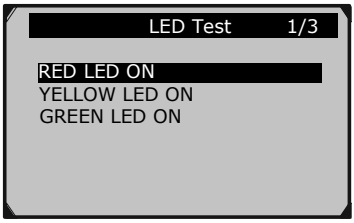


Figure P

2. To verify that the LEDs are functioning properly, select each LED then press **OK.** If functioning properly, the selected LED will light up.
3. Press **ESC** to exit the test.

I/M Readiness Quick-Check

To check emissions readiness prior to having a vehicle inspected for a state Emissions Test.

To determine which Monitors to configure.

CAUTION: Do not connect or disconnect the Scan Tool while the ignition is on or the engine is running.

1. Connect the Scan Tool according to **"Connect Scan Tool" on page 12.**
2. Turn the vehicle's ignition **ON** with the engine **OFF**.
3. Wait until the Scan Tool has established communication.
4. Press the **I/M** button on the keyboard.
5. View results and interpret data as described below.

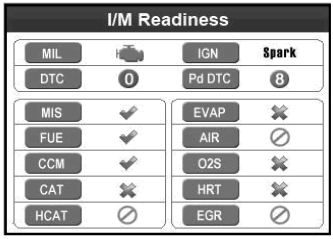


Figure Q

Note: You may need to complete a Drive Cycle before performing an **I/M Readiness Test** if the battery has been disconnected or DTCs have been erased recently.

Icon Interpretations

MIL - "Check Engine" light status

IGN - Ignition type

DTC - Number of stored DTCs

PdDTC - Number of pending DTCs

Symbol Interpretations

Each Monitor's readiness is indicated by one of the following symbols:

✔ The Monitor has completed its diagnostic routine and is ready.

✖ The Monitor has not completed its diagnostic routine and is not ready.

- **Perform a Drive Cycle, then repeat the test.**

⊘ The Monitor is not supported on the vehicle and may be deselected according to **"Configure Monitors" on page 14.**

Keyboard LED Interpretations

1. **Green LED - Ready**
   Indicates that engine systems are running normally and no pending DTCs are present.
2. **Yellow LED - Might be Ready**
   Indicates there are pending DTCs or there are Monitors that have not finishing running.
   - **Perform a Drive Cycle, then repeat the test.**
3. **Red LED - Not Ready**
   Indicates there is a fault condition in one of the vehicle's systems and stored DTCs are present.
   - **Have the vehicle serviced.**

Diagnostic Test Modes

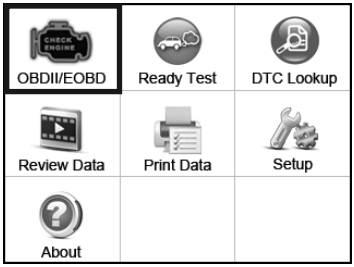
CAUTION: Do not connect or disconnect the Scan Tool while the ignition is on or the engine is running.

1. Connect the Scan Tool. according to **"Connect Scan Tool" on page 12.**
2. Turn the vehicle's ignition **ON** with the engine **OFF.**

Note: Not all vehicles return the same data, results may vary from the examples given herein.

Access Diagnostic Menu

1. From the **Main Menu,** select **OBDII/EOBD (Diagnostic Menu)**, then press **OK.**



Main Menu

2. **System Status** will display momentarily.

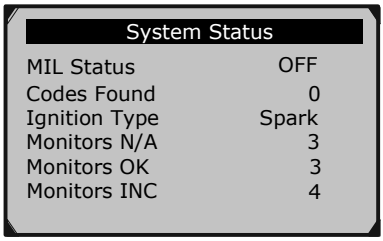


Figure R

3. **Control Module** will display.

   In **Figure S** below, the example vehicle uses the CAN Protocol and has the following Control Modules:

   $7E8 - PCM ID
   $7E9 - TCM ID

   (See **Control Modules** on **page page 6** for more information.)

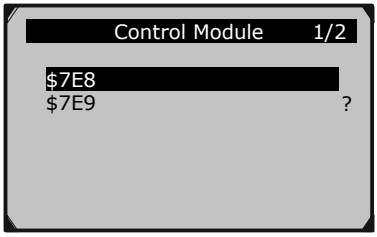


Figure S

4. Press **OK** to go to **Diagnostic Menu.**

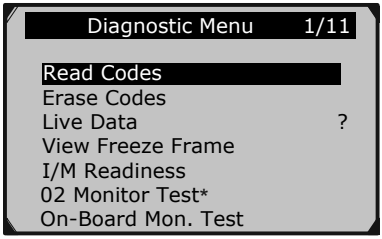


Figure T

Note: If vehicle is 2008 or newer, the **02 Monitor Test*** will not be present.

Read Trouble Codes
Modes $03, $07 and $0A Request Emission-Related DTCs

1. From **Diagnostic Menu,** select **Read Codes,** then press **OK.**

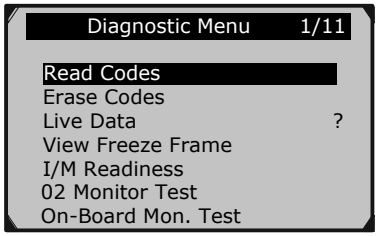


Figure U

Read Codes

1. From **Read Codes,** select from:
   a. **Stored Codes -** Mode $03
   b. **Pending Codes -** Mode $07
   c. **Permanent Codes -** Mode $0A This mode is available on some vehicles starting in 2010 and is required on all 2012 and newer vehicles.
2. If there are no DTCs, the message **"No codes are stored in the module"** will appear.
3. View the DTC.

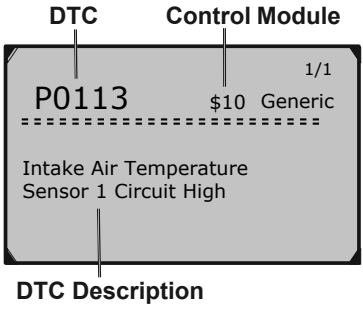


Figure V

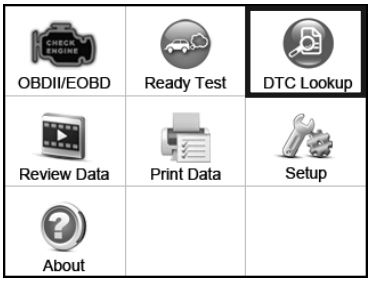
4. See **"DTC Lookup" on page 20** to view likely causes for DTCs.

Note: To view operational data stored when the DTC was stored, see **View Freeze Frame Data on page 28.**

DTC Lookup

Search the DTC library for code definitions.

From the **Main Menu,** select **DTC Lookup**, then press **OK.**



Main Menu

1. Input the DTC by using the buttons to highlight and change digits, then press **OK.**

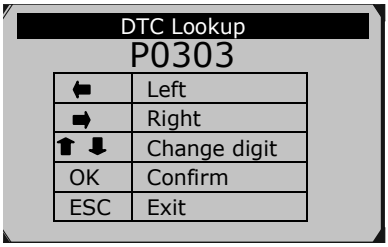


Figure W

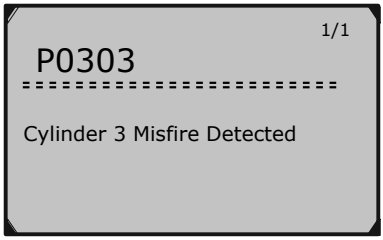


Figure X

2. Press the **?** button to view likely causes for the DTC.
3. If a DTC is manufacturer specific, a screen will prompt the choice of vehicle make.
4. If a DTC is not found, the Scan Tool will refer you to the vehicle's owner's manual.

Note: DTC definitions can also be found online.

CEN-TECH®

Erase Codes
Mode $04 Clear/Reset Emission-Related Diagnostic Information

WARNING! Do not clear any DTCs before the vehicle has been repaired and the system has been checked completely by a qualified technician.
As long as there is a fault condition, the DTCs will continue to set and turn on the MIL.

Note: If the vehicle stores permanent DTCs, they cannot be erased by the Scan Tool. They can only be erased by the OBD II system, after repairs are made, and a set number of Driving Cycles have been completed.

1. Turn the vehicle's ignition **ON** with the engine **OFF**.
2. From **Diagnostic Menu**, select **Erase Codes**, then press **OK.**

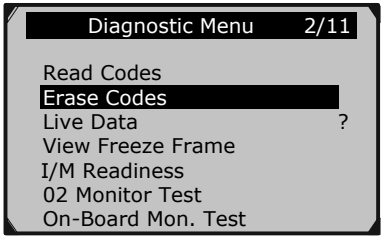


Figure Y

3. Choose whether or not to erase codes.

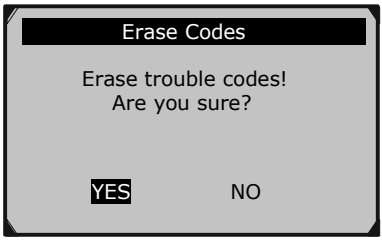


Figure Z

4. When DTCs have been erased, the following message will appear.

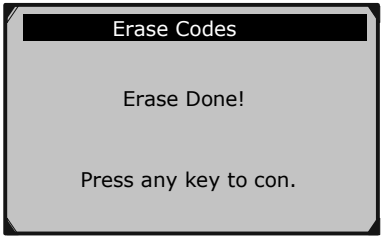


Figure AA

Note: Erasing codes will reset the Monitors to incomplete status. A Drive Cycle will need to be completed before performing an Emissions Readiness Test.

View Live PID Data

This function allows viewing of one frame of data only, for multiple frame viewing, see **"Record Live PID Data" on page 24.**

This section contains advanced functions. Some of the data may need to be interpreted by a qualified technician.

1. From **Diagnostic Menu**, select **Live Data**, then press **OK.**

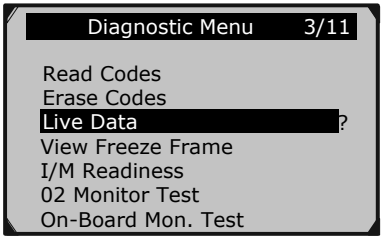


Figure AB

2. From **Live Data,** select **View Data**, then press **OK.**

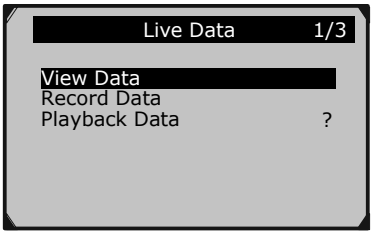


Figure AC

Complete Data Set - View All PIDs

1. From **View Data**, select **Complete Data Set**, then press **OK.**

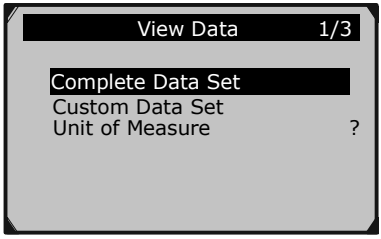


Figure AD

2. View all PIDs and their parameters using the Up and Down Buttons.

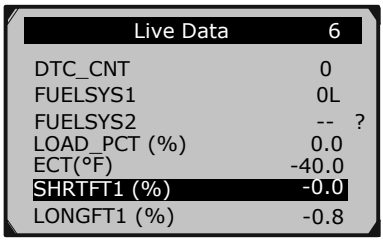
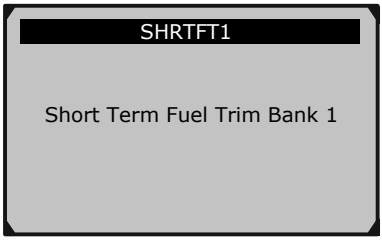


Figure AE

3. Press **?** to view the PID's full name.



4. Press **OK** to view a graph, if available.

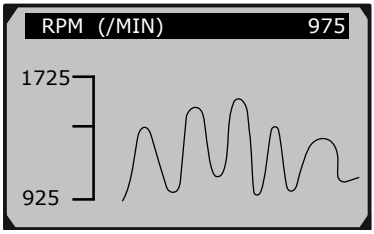


Figure AF

Note: If necessary, have a qualified technician interpret the data.

Custom Data Set - View Selected PIDs

1. From **View Data**, select **Custom Data Set**, then press **OK.**

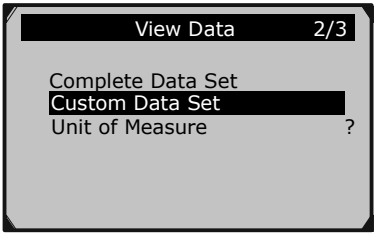


Figure AG

2. **Custom Data Set** screen shows which buttons can be used to select/deselect PIDs. Press any button to move to the next screen.

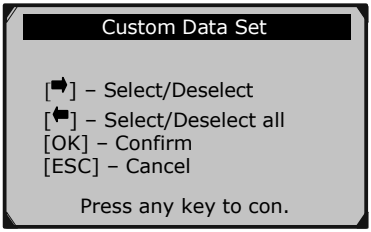


Figure AH

3. Select PIDs to view.

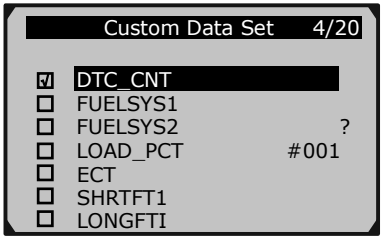


Figure AI

4. Press **OK** to view selected PIDs.

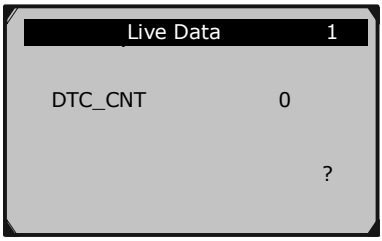


Figure AJ

Note: If necessary, have a qualified technician Interpret the data.

Record Live PID Data

View multiple frames of data collected over a period of time.

This section contains advanced functions. Some data may need to be interpreted by a qualified technician.

1. From **Diagnostic Menu,** select **Live Data,** then press **OK.**

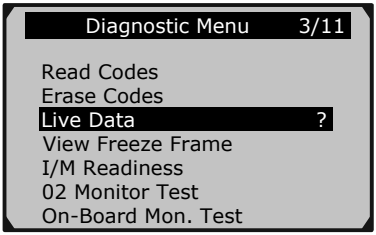


Figure AK

2. From **Live Data**, select **Record Data**, then press **OK.**

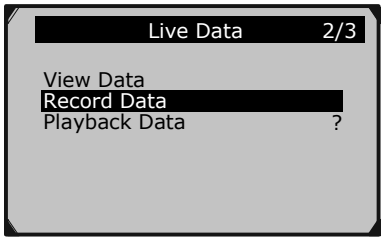


Figure AL

Complete Data Set - Record All PIDs

WARNING! DO NOT attempt to operate the Scan Tool while driving the vehicle. Have a passenger operate the Scan Tool.

1. Start the vehicle and begin driving.
2. From **Record Data**, have the passenger select **Complete Data Set,** then press **OK.**

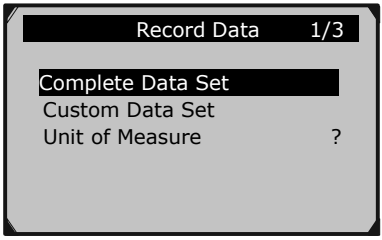


Figure AM

3. Have the passenger select a **Trigger Mode:**
   - **Manual Trigger -** Recording will begin after memory location is selected.
   - **DTC Trigger -** Recording will begin when a DTC is detected.

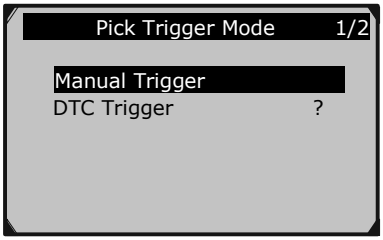


Figure AN

Complete Data Set - Record All PIDs (continued)

3. From **Select Memory,** have the passenger select a memory location, then press **OK.**

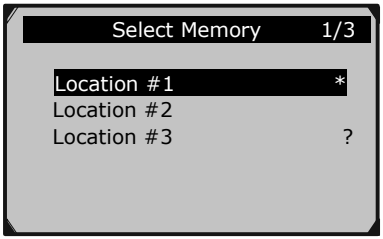


Figure AO

Note: An asterisk (*) next to a location indicates a recording already exists there. Selecting this location will overwrite it with new data.

4. After the passenger determines that recording is finished, stop driving. Data can be viewed immediately or saved to view later.

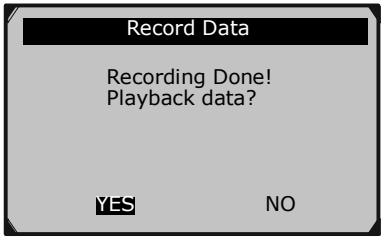


Figure AP

Playback Data

Note: If necessary, have a qualified technician interpret the data.

1. Scroll Left/Right/Up/Down to view Playback Data:

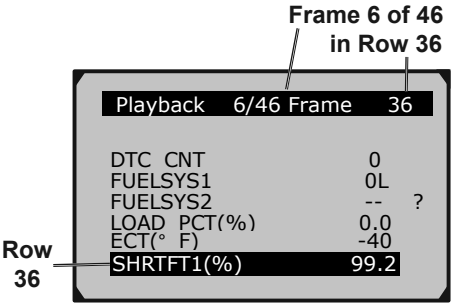


Figure AQ

Interpret Playback Data:

In the grid below, each row contains frames of PID values shown in **Figure AQ.**

In this example, there are 36 PIDs (rows) with 46 frames in each row.

The highlighted frame shows frame **6 of 46 for Row 36.** This particular frame shows that the PID for **Short Term Fuel Trim Bank 1** has a value of **99.2%.**

Each frame shows a value at the time of capture, making it possible to see how the values of individual PIDs fluctuate over the course of the recording by scrolling across rows.

3/46 34	4/46 34	5/46 34	Frame 6/46 Row 34 - LOAD PCT(%) 0.0	7/46 34	8/46 34	9/46 34
3/46 35	4/46 35	5/46 35	Frame 6/46 Row 35 - ECT(° F) - 40	7/46 35	8/46 35	9/46 35
3/46 36	4/46 36	5/46 36	Frame 6/46 Row 36 - SHRTFT1(%) 99.2	7/46 36	8/46 36	9/46 36

Figure AR: Interpreting Playback Data

Custom Data Set - Record Select PIDs

WARNING! DO NOT attempt to operate the Scan Tool while driving the vehicle. Have a passenger operate the Scan Tool.

1. Start the vehicle and begin driving.
2. From **Record Data**, have the passenger select **Custom Data Set,** then press **OK.**

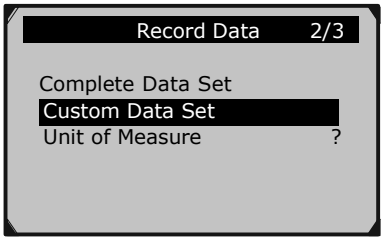


Figure AS

3. **Custom Data Set** screen shows which buttons can be used to select/deselect PIDs. Have the passenger press any button to move to the next screen.

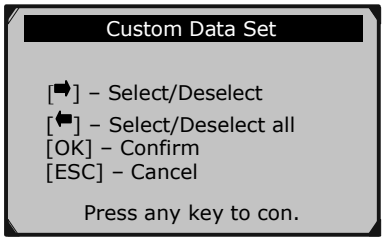


Figure AT

4. Have the passenger select/deselect PIDs.

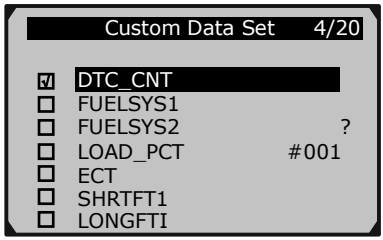


Figure AU

5. Have the passenger select a **Trigger Mode:**
   - **Manual Trigger -** Recording will begin after memory location is selected.
   - **DTC Trigger -** Recording will begin when a DTC is detected.

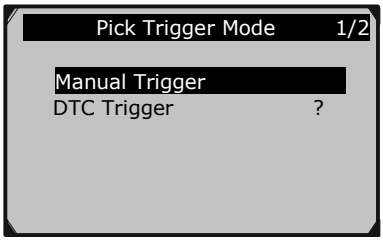


Figure AV

6. From **Select Memory,** have the passenger select a memory location, then press **OK.**

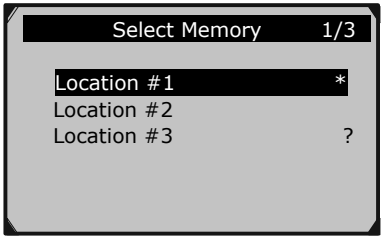


Figure AW

Note: An asterisk (*) next to a location indicates a recording already exists there. Selecting this location will overwrite it with new data.

6. After the passenger determines that recording is finished, stop driving. Data can be viewed immediately or saved to view later.

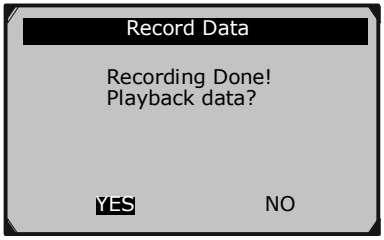


Figure AX

7. Interpret data according to **"Playback Data" on page 25.**

Note: If necessary, have a qualified technician interpret the data.

Playback Live PID Data

This section contains advanced functions. Some data may need to be interpreted by a qualified technician.

1. From **Diagnostic Menu**, select **Live Data**, then press **OK.**

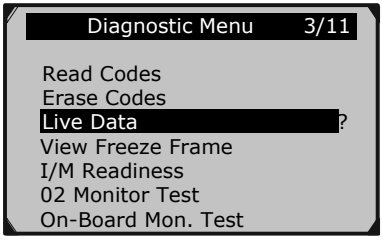


Figure AY

2. From **Live Data**, select **Playback Data**, then press **OK.**

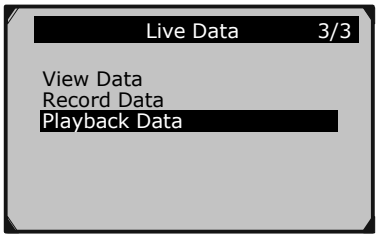


Figure AZ

3. From **Select Memory,** select a memory location marked with an asterisk (*), then press **OK.**

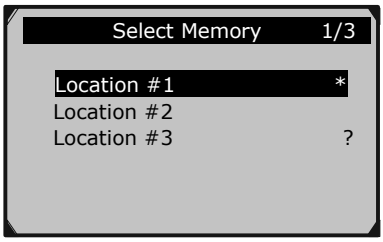


Figure BA

4. Interpret data according to **"Playback Data" on page 25.**

Note: If necessary, have a qualified technician Interpret the data.

View Freeze Frame Data
Mode $02 Request Powertrain Freeze Frame Data

View the vehicle's operating conditions when a DTC is stored.

This section contains advanced functions. Some data may need to be interpreted by a qualified technician.

Note: Not all vehicles return the same data, results may vary from the examples given herein.

1. From **Diagnostic Menu**, select **View Freeze Frame**, then press **OK.**

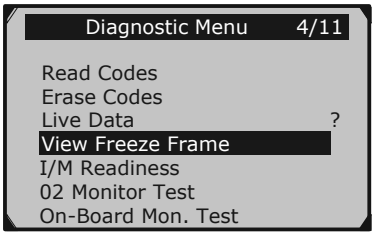


Figure BB

2. View data.

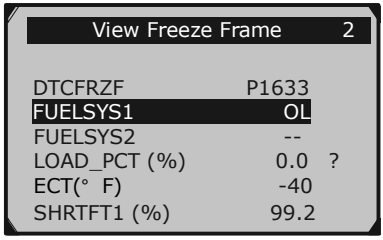


Figure BC

3. Select a PID, then press **OK** to view the full name.

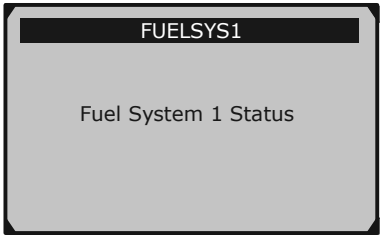


Figure BD

Note: If necessary, have a qualified technician Interpret the data.

I/M Readiness

Check emissions readiness prior to having a vehicle inspected for a state Emissions Test.

1. From **Diagnostic Menu,** select **I/M Readiness,** then press **OK.**

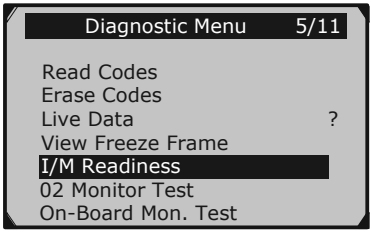


Figure BE

2. View test results.

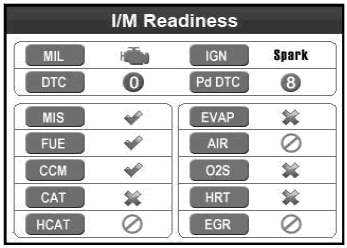


Figure BF

Note: See **"I/M Readiness Quick-Check" on page 17** to interpret data.

02 Monitor Test
Mode $05 Request Oxygen Sensor Monitoring Test Results (2007 and older vehicles only)

View the oxygen sensor test data on pre-CAN vehicles.

For CAN vehicles, see **On-Board Monitor Test on page 30**.

This section contains advanced functions. Some data may need to be interpreted by a qualified technician.

Note: Not all vehicles return the same data, results may vary from the examples given herein.

1. From **Diagnostic Menu**, select **O2 Monitor Test**, then press **OK.**

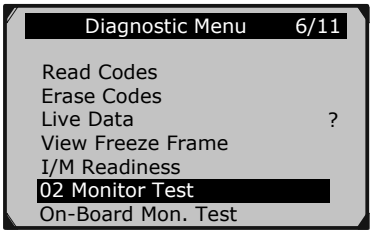


Figure BG

2. Select a sensor, then press **OK.**

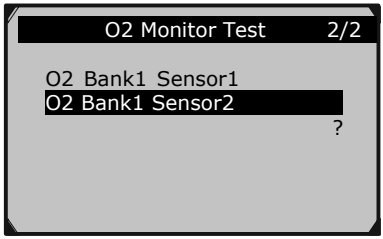


Figure BH

3. View data.

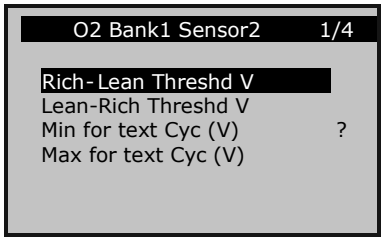


Figure BI

Note: If necessary, have a qualified technician Interpret the data.

On-Board Monitor Test
Mode $06 Request On-Board Monitoring Test Results for Specific Monitored Systems

View test data for Non Continuous Monitors.

This section contains advanced functions. Some data may need to be interpreted by a qualified technician.

Note: Not all vehicles return the same data, results may vary from the examples given herein.

1. From **Diagnostic Menu**, select **On-Board Mon. Test**, then press **OK.**

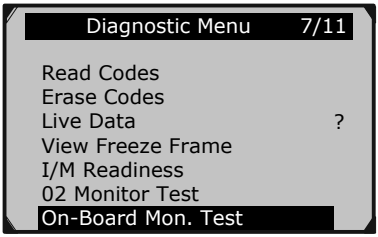


Figure BJ

2. Select vehicle manufacturer.

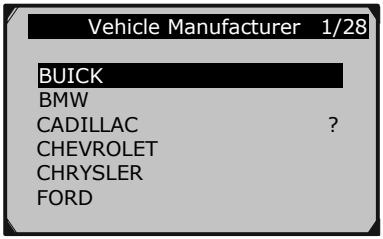


Figure BK

3. Select and view Monitors, their tests and results as needed.

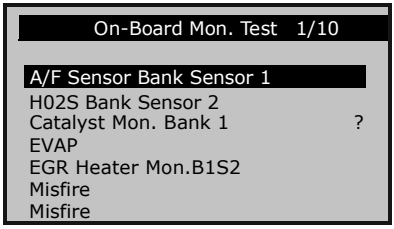


Figure BL

Note: If necessary, have a qualified technician Interpret the data.

CEN-TECH®

Component Test
Mode $08 - Request Control of On-Board System, Test or Component

Command the PCM to run an Evaporative Leak Test.

This section contains advanced functions. Some data may need to be interpreted by a qualified technician.

Note: Not all vehicles return the same data, results may vary from the examples given herein.

1. From **Diagnostic Menu**, select **Component Test**, then press **OK.**

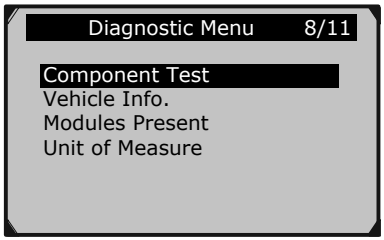


Figure BM

If the vehicle does not allow the test, an advisory message will be displayed.

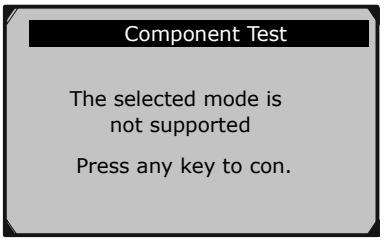


Figure BN

If the vehicle responds, a confirmation message will be displayed.

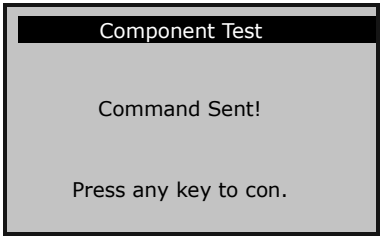


Figure BO

2. View test module.

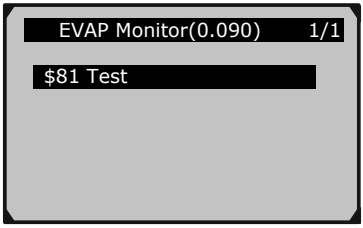


Figure BP

3. Press **OK** for test results.

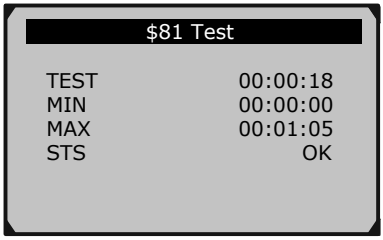


Figure BQ

Note: If necessary, have a qualified technician Interpret the data.

Mode $09 Vehicle Information

View vehicle information, such as VIN, Calibration ID, and CVN.

Note: Not all vehicles return the same data, results may vary from the examples given herein.

1. From **Diagnostic Menu**, select **Vehicle Info.,** then press **OK.**

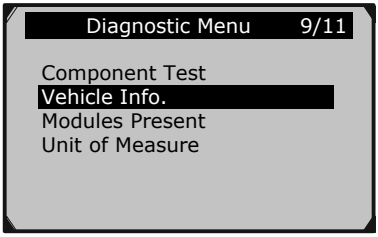


Figure BR

2. From **Vehicle Info.,** select, **Vehicle ID Number** then press **OK.**

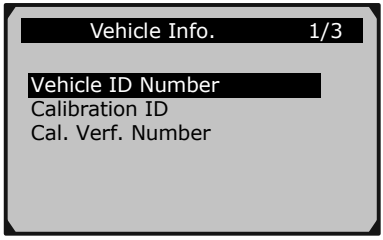


Figure BS

3. View **Vehicle ID Number.**

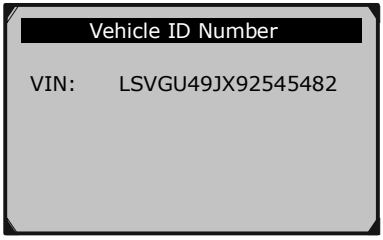


Figure BT

4. From **Vehicle Info.,** select, **Calibration ID** then press **OK.**

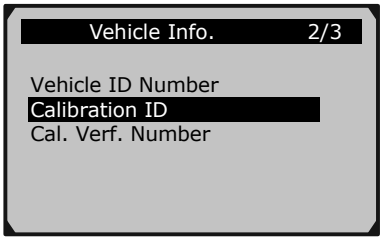


Figure BU

5. View **Calibration ID** information.

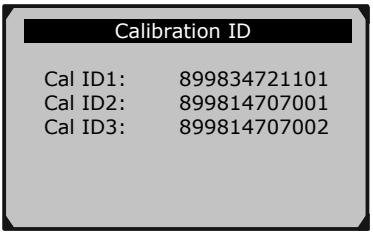


Figure BV

6. From **Vehicle Info.,** select, **Cal. Verf. Number** then press **OK.**

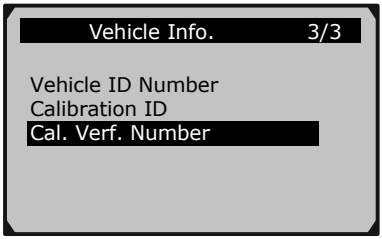


Figure BW

7. View **CVN** information.

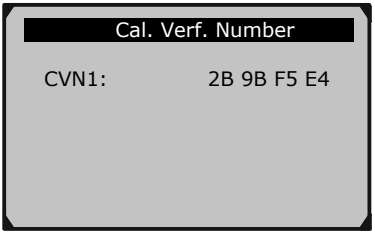


Figure BX

Modules Present

View Control Module IDs and their Communication Protocols.

Note: Not all Modules are supported by all vehicles.

Note: Not all vehicles return the same data, results may vary from the examples given herein.

1. From **Diagnostic Menu**, select **Modules Present,** then press **OK.**

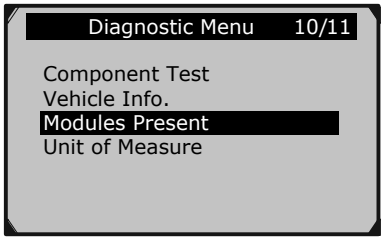


Figure BY

2. **Control Module** will display.
3. In **Figure BZ** below, the example vehicle uses a CAN bus and has the following ODB Control Module IDs and Protocols:

ID	Control Module	Communication Protocol
$7E8	Powertrain	CAN bus
$7E9	Transmission	CAN bus

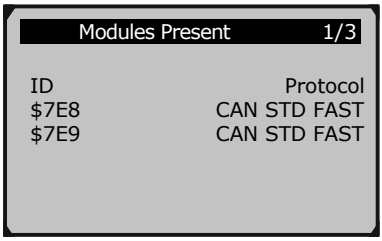


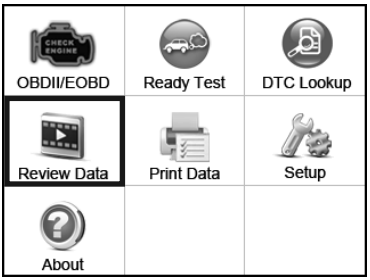
Figure BZ

Review Data - Mode $01 - Current Powertrain Diagnostic Data

View data from the last recorded test.

Note: Not all vehicles return the same data, results may vary from the examples given herein.

From the **Main Menu,** select **Review Data**, then press **OK.**



Main Menu

1. Select and view data as needed.

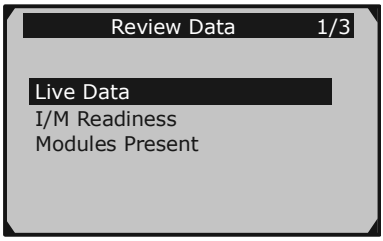


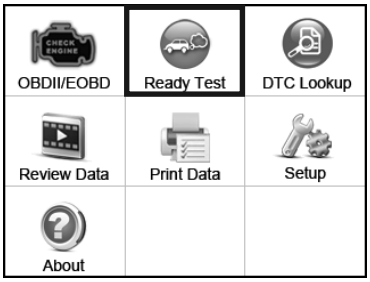
Figure CA

Note: If necessary, have a qualified technician Interpret the data.

Ready Test

CAUTION: Do not connect or disconnect the Scan Tool while the ignition is on or the engine is running.

1. Connect the Scan Tool according to **"Connect Scan Tool" on page 12.**
2. Turn the vehicle's ignition **ON** with the engine **OFF**.
3. From the **Main Menu,** select **Ready Test**, then press **OK.**



Main Menu

4. View test results.

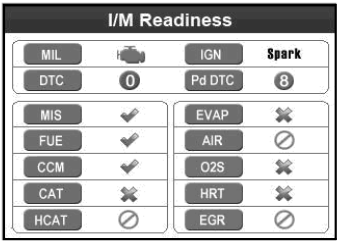
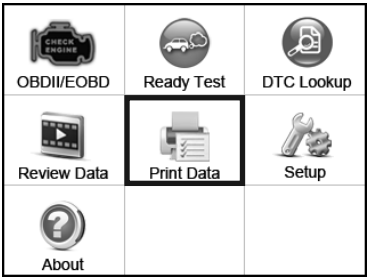


Figure CB

Note: See **"I/M Readiness Quick-Check" on page 17** to interpret data.

Print Data

1. Connect the Scan Tool to the computer with the supplied USB Cable.
2. From the **Main Menu,** select **Print Data**, then press **OK.**



Main Menu

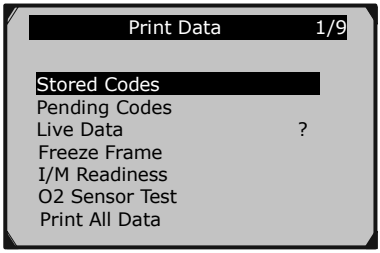


Figure CC

3. Follow instructions on the Scan Tool and the computer.

Install/Update Software

This function allows you to update the Scan Tool software and DTC library through a computer.

Note: The Scan Tool comes with the most recent software and DTC library versions.

1. On the computer, install setup.exe driver from the included CD or download the driver from the internet:
   a. Go to www.HarborFreight.com
   b. Search for 62120
   c. Click **Software Update** tab
   d. Download software (if there is an update available)
   e. Open Update Instructions PDF
   f. Follow instructions
2. Connect the Scan Tool to the computer with the supplied USB Cable.
3. From **System Setup**, select **Update Mode**, then press **OK.**

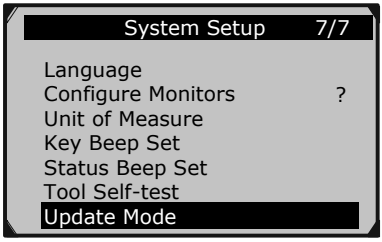


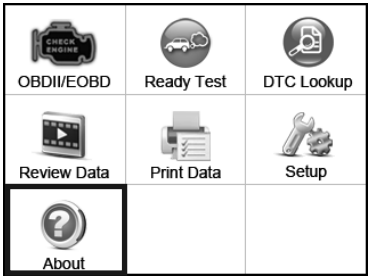
Figure CD

4. Follow instructions on the Scan Tool and the computer.

About

View software, hardware, and DTC library versions and Serial Number.

From the **Main Menu,** select **About**, then press **OK.**



Main Menu

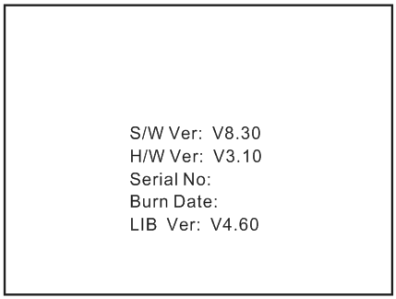


Figure CE

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

Inspection and Maintenance

Procedures not specifically explained in this manual must be performed only by a qualified technician.

⚠WARNING

TO PREVENT SERIOUS INJURY FROM ELECTRICAL SHOCK:
Make sure that the Scan Tool is unplugged from the vehicle before performing any procedure in this section.

TO PREVENT SERIOUS INJURY FROM TOOL FAILURE:
Do not use damaged equipment. If abnormal noise or vibration occurs, have the problem corrected before further use.

Inspection

1. **BEFORE EACH USE,** inspect the general condition of the Scan Tool. Check for:
   - cracked or damaged Cable,
   - cracked or broken parts, and
   - any other condition that may affect its safe operation.

Cleaning and Storage

1. **AFTER USE,** use a mild detergent on a clean cloth to remove any oil, grease or dirt from the Scan Tool, especially on the buttons, being careful to not put excessive pressure on the Display Screen.
2. Do not use solvents on the Keyboard. Do not soak the Keyboard, Use a mild nonabrasive detergent and a soft cloth.
3. Store the Scan Tool, and accessories away from sunlight in a dry, locked area, out of the reach of children.

Troubleshooting

Problem	Possible Causes	Likely Solutions
Scan Tool doesn't power up	1. OBD II Cable connector not connected securely. 2. Vehicle's DLC pins are bent or broken. 3. Vehicle's battery is bad.	1. Verify that the Scan Tool's OBD II Cable connector is securely connected to the vehicle's DLC. 2. Check if the DLC pins are bent or broken. If bent or broken, have a certified technician repair the DLC. 3. Make sure vehicle's battery it providing at least 8V.
Vehicle Linking Error	1. Vehicle is not OBD compliant. 2. Ignition is off. 3. Bad connection.	1. Verify that the vehicle is OBD II compliant. 2. Verify that the ignition is ON. 3. Reset the tool by turning the ignition off, waiting 10 seconds, then turning the ignition back on.
Scan Tool Freezes	Scan Tool or vehicle's computer system not responding.	Reset the Scan Tool by turning the ignition off, waiting 10 seconds, then turning the ignition back on.
LED Lamps Not Working	Defective LEDs	Run the LED Test, according to page16. If LED(s) fail, have a qualified technician replace the LED(s).

Follow all safety precautions whenever diagnosing or servicing the tool. Disconnect power supply before service.

PLEASE READ THE FOLLOWING CAREFULLY

THE MANUFACTURER AND/OR DISTRIBUTOR HAS PROVIDED THE PARTS LIST IN THIS DOCUMENT AS A REFERENCE TOOL ONLY. NEITHER THE MANUFACTURER OR DISTRIBUTOR MAKES ANY REPRESENTATION OR WARRANTY OF ANY KIND TO THE BUYER THAT HE OR SHE IS QUALIFIED TO MAKE ANY REPAIRS TO THE PRODUCT, OR THAT HE OR SHE IS QUALIFIED TO REPLACE ANY PARTS OF THE PRODUCT. IN FACT, THE MANUFACTURER AND/OR DISTRIBUTOR EXPRESSLY STATES THAT ALL REPAIRS AND PARTS REPLACEMENTS SHOULD BE UNDERTAKEN BY CERTIFIED AND LICENSED TECHNICIANS, AND NOT BY THE BUYER. THE BUYER ASSUMES ALL RISK AND LIABILITY ARISING OUT OF HIS OR HER REPAIRS TO THE ORIGINAL PRODUCT OR REPLACEMENT PARTS THERETO, OR ARISING OUT OF HIS OR HER INSTALLATION OF REPLACEMENT PARTS THERETO.

Parts List

Part	Description	Qty
1	Scan Tool	1
2	OBD II Cable	1
3	USB Cable	1
4	Storage Bag	1

Record Serial Number Here:

Note: If product has no serial number, record month and year of purchase instead.

Note: Some parts are listed and shown for illustration purposes only, and are not available individually as replacement parts.

Limited 90 Day Warranty

Harbor Freight Tools Co. makes every effort to assure that its products meet high quality and durability standards, and warrants to the original purchaser that this product is free from defects in materials and workmanship for the period of 90 days from the date of purchase. This warranty does not apply to damage due directly or indirectly, to misuse, abuse, negligence or accidents, repairs or alterations outside our facilities, criminal activity, improper installation, normal wear and tear, or to lack of maintenance. We shall in no event be liable for death, injuries to persons or property, or for incidental, contingent, special or consequential damages arising from the use of our product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation of exclusion may not apply to you. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

To take advantage of this warranty, the product or part must be returned to us with transportation charges prepaid. Proof of purchase date and an explanation of the complaint must accompany the merchandise. If our inspection verifies the defect, we will either repair or replace the product at our election or we may elect to refund the purchase price if we cannot readily and quickly provide you with a replacement. We will return repaired products at our expense, but if we determine there is no defect, or that the defect resulted from causes not within the scope of our warranty, then you must bear the cost of returning the product.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

CEN-TECH®

3491 Mission Oaks Blvd. • PO Box 6009 • Camarillo, CA 93011 • 1-888-866-5797